Two New Species of *Passiflora* supersect. *Decaloba* (Passifloraceae) from Eastern Mexico

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Abstract. Two new species of *Passiflora* L. (Passifloraceae) endemic to eastern Mexico are described and illustrated and placed in subgenus *Decaloba* (DC.) Rchb., supersection *Decaloba* in a clade distinguished by no laminar nectaries. *Passiflora dictamo* DC. is a synonym of *P. biflora* Lam., and the rare diminutive species previously assigned to *P. dictamo* in Killip's monograph is described as *P. lauana* J. M. MacDougal. A second species, *P. complanata* J. M. MacDougal, is described and placed in the *P. sexflora* Juss. species group, where it is notable for its clusters of large flowers to 4 cm diam., flattened stems, and unusual 1/2 phyllotaxy. From Mexico we now recognize 75 native species of passionflowers.

Keywords: IUCN Red List, Mexico, *Passiflora* subg. *Decaloba*, Passifloraceae.

Presented here are two new species of passionflowers from the states of Oaxaca and Puebla, Mexico, bringing the number of native species of *Passiflora* L. known in that country to 75, of which 59 are in subgenus *Decaloba* (DC.) Rchb. This subgenus is comprised mostly of smaller-flowered species with small purple berries, and it contains a number of clades and species groups that have radiated and diversified in the seasonal temperate or wet mountains of Mexico. Many of the species in subgenus *Decaloba* have limited distributional ranges, sometimes confined to one part of a mountain range, and the two new species described herein are local endemics.

The first species to be described below was originally treated by Killip in his monograph (1938) under the misapplied name *Passiflora dictamo* DC. Killip (1938: 144) assigned that name to two Mexican specimens collected by C. A. Purpus "with much hesitation, for that [name] may be only a synonym of *P. biflora* [Lam.]." De Candolle had coined the name *P. dictamo* in 1828 (p. 324) for one of the "fl. mex. ic. ined.," or one of the unpublished plates from the Royal Botanical Expedition to New Spain, 1787–1803, sometimes referred to as the Sessé and Mociño Expedition. Reported as DC. Plate no. 28, a colored copy (McVaugh, 1980), the plate conserved at G-DC is actually an original painting and bears the Fl. Mex. Icones number 362 in Mociño's hand, according to McVaugh (1980: 131). A virtually identical, but slightly more detailed, original painting is in the Torner collection at the Hunt Institute for Botanical Documentation, Torner coll. no. 0363, labeled as "Passiflora Normalis" and "362." The DC. Plate no. 28 at G-DC was designated as lectotype of the name *P. dictamo* by McVaugh (2000: 427). Although only one painting is the lectotype, it is useful to consider evidence from both in this analysis because they are nearly identical copies, contemporarily or nearly simultaneously executed (McVaugh, 1980), and the one at the Hunt Institute is slightly more detailed. The two paintings show a fruiting passiflora with bilobed leaves with obtuse to rounded, divergent tapering lobes, and no laminar nectaries. The fruits depicted show extended androgynophores, approaching the length of the peduncles. The lack of leaf glands is unusual in bilobed passionflowers and was noted by both de Candolle and Killip.

At MA and F there are specimens from the expedition labeled "Passiflora normalis [L.]," *Sessé & Mociño 3302* (F, fragm. seen; MA, photo seen), with a range of leaf shapes strikingly similar to the range of leaf shapes shown in the paintings described above. This specimen is identified and corresponds to *Passiflora biflora* Lam. The specimen shows small inconspicuous leaf glands typical of that species, but it is remarkable that the range of leaf shapes, especially the angle of the lateral veins with most lobes widely divergent but with some more narrow lobes, matches closely the same range seen in the paintings, and the leaves closely resemble those in the paintings. The specimen has no fruits, but the relatively long androgynophores seen in the paintings are typical of *P. biflora*. It appears, then, that the inconspicuous leaf glands were overlooked by the original artist, and that the name *P. dictamo* and its derivative *Cieca dictamo* (DC.) M. Roem. (1846: 2: 146) are later synonyms of *P. biflora*.

Passiflora biflora Lam., Encycl. 3(1): 36. 1789, non *Passiflora biflora* Dombey ex Triana & Planch.,

Ann. Sci. Nat., Bot., sér. 5, 17: 156. 1873, nom. inval. *Decaloba biflora* (Lam.) M. Roem., Fam. Nat. Syn. Monogr. 2: 161. 1846. TYPE: "L'Amérique méridionale [country unknown] cult." s.d., *s. coll.*, *s.n.* (P-LAM [barcode] P00307580).

Passiflora dictamo DC., Prodr. 3: 324. 1828, syn. nov. *Cieca dictamo* (DC.) M. Roem., Fam. Nat. Syn. Monogr. 2: 146. 1846. TYPE: Mexico (lectotype, designated by McVaugh [2000: 427], as DC. Plate 28, Sessé & Mociño Expedition [Fl. Mex. Icones 362], G-DC, G-DC photo at F-030459).

The range of leaf shapes of the *Purpus s.n.* specimens placed by Killip (1938: 144) under the misapplied name *Passiflora dictamo* does not closely resemble the shapes in the painting that stands as lectotype for *P. dictamo*. Additionally, that lectotype painting remarkably resembles the collection *Sessé & Mociño 3302* at MA, which is now identified as *P. biflora*. The Purpus specimens cannot be assigned to any other known species in *Passiflora*; therefore, they are described here under a new name.

1. Passiflora lauana J. M. MacDougal, sp. nov. TYPE: MEXICO. Puebla: [Mpio. de Caltepec,] Cerro de Mazize [18°11′54″N, 97°25′29″W], 8000 ft., on rocks, July 1907, *C. A. Purpus s.n.* (holotype, UC-140971, F photo, MO image, NY photo, US photo). Figures 1, 2.

Haec species sarmentosa exigua a congeneris *Passiflorae* sectionis *Decalobarum* (DC.) Rchb. foliis bilobis nectariis laminaribus carentibus, bractea nulla vel solitaria dentataque, flore in diam. minus quam 1.5 cm, corona biseriata, androgynophoro ca. 4 mm longo atque ovario glabro distinguitur.

Small perennial herbaceous climber; stems 0.7–1.5 mm diam. at reproductive nodes, strongly pubescent with minute antrorsely curved trichomes less than 0.2 mm, somewhat terete, longitudinally grooved-striate, the ridges rounded, very obvious when dried; stipules (1.5–)2–3.5 × (0.3–)0.4–0.6(–0.8) mm, linear-lanceolate to lanceolate, falcate, 3- or 4-veined, margins entire or sometimes serrulate or with a tooth, glabrous except sometimes some trichomes on margins, often purple at base, late-necrescent distally. Leaves with petioles 4–8 mm, eglandular, adaxially pubescent, abaxially glabrous; laminas 0.5–2.0 × 1.4–3.7 cm, depressed obovate in outline, entire, variegated on lower leaves with pale stripes along main veins, especially lateral veins, lightly pubescent to nearly glabrous adaxially, with at least a few trichomes on main veins, abaxially glabrous, shallowly bilobed 0.1–0.4 the distance to shallowly cordate to truncate or rarely rounded base, the lateral lobes 0.9–2.6 cm, obtuse to rounded, sometimes truncate, very rarely subacute, the central lobe 0.5–1.2 cm, obsolescent, truncate, retuse, or rarely widely obtuse (often absent, with the result that the length of the central vein is the same as the width of the lateral lobes), the angle between the lateral lobes 72°–125°; laminar nectaries absent; prophylls of vegetative bud two, 0.7–1 mm, ovate, 3-toothed, apically short-caudate. Peduncles (1)2 per node, 0.6–2 cm, uniflorous; bracts absent or 1 at apex or to 7 mm below the apex, 0.8–1.3 × 0.3–0.6 mm, narrowly oblong, irregularly few-toothed at apex or near apex, often appearing ca. 3-toothed. Flowers ca. 1.2 cm diam., green-white or pale green-yellow with purple ring in center, the corona mostly pale yellow; stipe 1.5–2.5 mm; hypanthium (floral tube) ca. 5 mm diam., tinged purple, glabrous; sepals ca. 6–7 × 3–3.5 mm, ca. narrowly ovate-oblong, 3-nerved, with no projection, pale green-yellow adaxially, green-yellow and tinged with purple, especially on the nerves, abaxially, sometimes flushing completely purple-red after anthesis; petals ca. 3.5–5 × 1.5–2 mm, narrowly ovate-oblong, whitish or pale green-yellow; coronal filaments in 2 series, the outer filaments 3.5–4 mm, long-clavate, apically blunt, yellow-green at the narrowed base and sometimes adaxially flushed with purple, the distal half falcate-spreading and pale to light yellow, the inner series 1–2 mm, capillary, clavate-capitellate; operculum ca. 1 mm high, membranous, plicate, purple; limen floor pale green; androgynophore 3.8–4.2 mm; ovary ca. 2 × 1.8 mm, subglobose to widely ellipsoid, glabrous. Mature fruit not seen, immature fruit from photograph an ellipsoid berry, green, 8 × 6 mm, apparently indehiscent (*Lau s.n.*, MO).

Remarkable for the small size of its leaves and flowers, reduced number of bracts, and lack of laminar nectaries, *Passiflora lauana* is known only from two collections by Purpus in Puebla made about a century ago, and from a set of three color photographs taken in Oaxaca (descending into Santiago Nuyoo [17°01′N, 97°45′W, ca. 7000–8000 ft.] from the east, Sep.) in 1987 by Alfred B. Lau and deposited at MO. Lau's photographs are not accompanied by a voucher specimen, yet there is no doubt that they represent a plant conspecific with the specimens. The small leaves are the same shape, very depressed obovate, bilobed, with the diagnostic absence of laminar nectary glands; the rather broad stipules match; and the details of the flowers coincide perfectly. Though separated by ca. 140 km, the habitat and elevation of the two localities are extremely similar. The photographs by Lau at MO (excerpted in Fig. 2) have provided details on the color of the parts of the flower, as well as the orientation of the corona and the immature fruit.

Figure 1. Image of holotype (UC) of *Passiflora lauana* J. M. MacDougal.

Passiflora lauana clearly belongs in subgenus and supersection *Decaloba* on account of the eglandular petioles, bilobed leaf, and plicate operculum. The absence of laminar extrafloral nectaries is a synapomorphy of a recently recognized large clade in supersection *Decaloba* (Krosnick et al., 2013), and the new species is assigned there. This clade includes series *Luteae* (Small) J. M. MacDougal, section *Xerogona* (Raf.) Killip, the *P. sexflora* Juss. group (MacDougal, 1989), and the *P. bilobata* Juss.

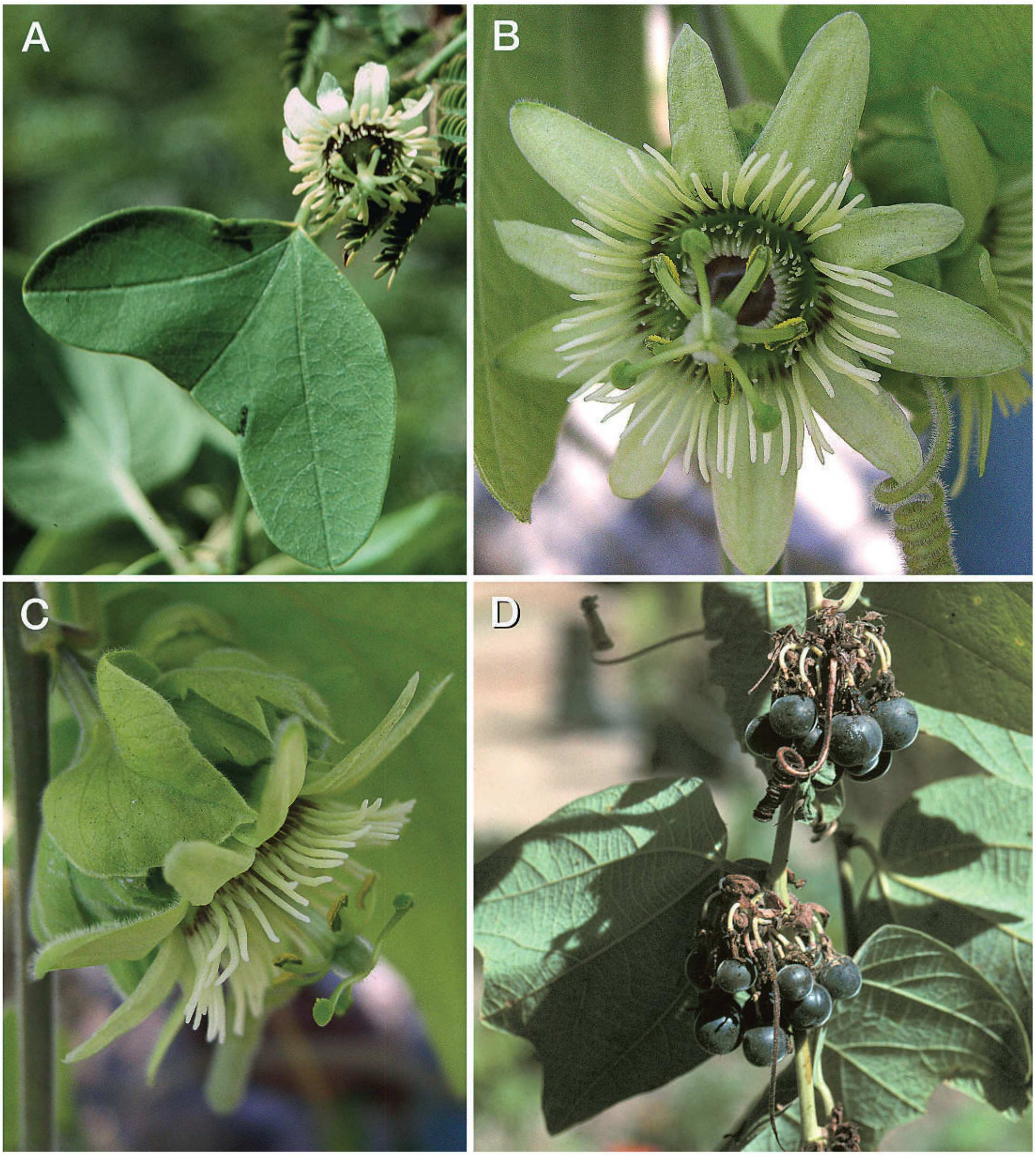

Figure 2. *Passiflora lauana* J. M. MacDougal (A) and *P. complanata* J. M. MacDougal (B–D). —A. *Passiflora lauana*. Flower and leaf, taken near Santiago Nuyoo, Oaxaca; photograph by Alfred Lau (MO). —B. *Passiflora complanata*. Flower at anthesis, taken from the paratype *J. M. MacDougal 555GR*, in cultivation in California, U.S.A.; photograph by Jorge Ochoa. —C. *Passiflora complanata*. First flower of developing inflorescence to open, on primary axis of peduncle; note conspicuous bracts, taken from *J. M. MacDougal 555GR*, in cultivation; photograph by Jorge Ochoa. —D. *Passiflora complanata*. Fruiting branch in field, San Mateo Yetla, taken from the paratype *J. M. MacDougal & J. Miley 555*.

group (Killip, 1938). These groups have their centers of diversity in southeastern Mexico, except the *P. bilobata* group, which is West Indian. *Passiflora lauana* is most similar to the species in series *Luteae* and the *P. bilobata* group by its small pale green-yellow flower with purple flush, small and rather deeply bilobed leaves without acute lobes, inconspicuous pubescence, and small indehiscent berry. The reduced number of bracts (or their absence) is reminiscent of series *Luteae*, while the slightly thickened and falcate distal portion of the outer coronal filaments resembles the *P. bilobata* group.

Limited sampling of the holotype revealed two prophylls at the vegetative ramifying bud, but this should be confirmed. Two is unusual in *Passiflora* sect. *Decaloba*, but is seen in at least one species of

series *Luteae*, *P. sanctae-mariae* J. M. MacDougal (MacDougal, 1995).

Killip (1938) first described the dried *Purpus s.n.* specimens, and his evaluation is accurate except that there are definitely two coronal rows, not one as he wrote. The inner row is reduced in number, is capillary, and appears to vary in expression among the different samples. Also, Killip mentions two bracts on the peduncles, a "single setaceous, deciduous bract at the point of articulation and a minute, 3-toothed bract near the middle" (1938: 143). The holotype has absolutely no bracts or bract scars on the several peduncles there, and those on the paratype *Purpus 3546* are solitary, with no additional bract scars seen. Perhaps the species has two bracts rarely. Killip (1938: 144) also mentions "fruit ca. 1 cm in diam.," but I found no fruits, fruit remnants, or seeds on the specimens. Observations of the fruit herein are taken from one of Lau's photographs.

The type locality in Puebla, Mexico, is close to San Luis Tultilanapa, according to Sousa (1969). This area is in southernmost Puebla, near the border with the state of Oaxaca, an area with a pronounced dry season. Passifloras also collected in this area by Purpus include *Passiflora suberosa* L. and *P. bryonioides* Kunth. I found notation of the elevation of 8000 feet jotted on a loose field label inside the packet of the holotype; it does not appear on the label.

Etymology. The species is named for Brother Alfred Bernhard Lau (1928–2007), indefatigable explorer, plant collector, and Christian missionary. Born in Germany, he moved to the United States and then Mexico after World War II, where he founded an orphanage in Veracruz. Known better for his botanical and field expertise in Cactaceae, Lau also discovered many rare and undescribed species of Passifloraceae and introduced several of the Mexican species to horticulture. His field notes and photographs have been instrumental to the understanding of many passionflowers, and he has been an inspiration to the author.

Phenology. *Passiflora lauana* is known in bud and flower from July to September, with immature fruit in September.

IUCN Red List category. According to IUCN Red List criteria, *Passiflora lauana* is categorized as Vulnerable (VU). This species can plausibly be assigned to the range of categories EN to NT (Endangered to Near Threatened); however, the best estimate is VU. The species is known only from two locations that are 140 km apart. The extent of occurrence (EOO) criteria suggest Endangered status, with an EOO < 5000 km^2, fewer than five locations (criterion B1a), and probable continuing decline in the area of occupancy (AOO) inferred from rate of habitat loss attributable to conversion of land to agriculture and grazing in that part of Mexico (criterion B1b(i,ii)). However, the specific habitat appears to be scrubby or rocky areas, and the species, a small inconspicuous vine, has not been carefully searched for, with the likelihood of extinction in the next 20 years assessed as low.

Paratype. MEXICO. **Puebla:** vic. of San Luis Tultilanapa, near Oaxaca, July 1908, *C. A. Purpus 3546* (UC-140977, B photo [barcode] 10 0293107, F photo).

2. Passiflora complanata J. M. MacDougal, sp. nov. TYPE: MEXICO. Oaxaca: 1 mi. NE of Villa Hermosa on Hwy. 175 & 46 mi. S of Tuxtepec, along Gulf slope, cloud forest of tree ferns, 4750 ft., 15 Aug. 1975 (bud, fl.), *D. G. LeDoux, K. J. Torke & Ellis 2308* (holotype, MO-2472151; isotypes, ASU, CAS-592525, ENCB, G-170542, INIF, LL, MEXU-262348). Figures 3, 4.

Haec species sarmentosa *Passiflorae sexflorae* Juss. et *P. rugosissimae* Killip affinis, sed ab eis flore 3–4.5 cm diam., bracteis 6–17 × 2.5–12 mm non profunde fissis atque caule semper complanato distinguitur.

Tough herbaceous vine to 3–6 m, densely white, short-pubescent or hispidulous throughout with trichomes 0.15–0.5(–0.6) mm, up to 1.2 mm long on buds; stems flattened, narrowly elliptic in cross section, (2.5–)4–6 mm wide in primary growth, stem phyllotaxy 1/2, cernuous at vigorous growing tips, otherwise weakly or not cernuous at apices, fruiting branches often pendent; stipules 3–4.2 × 0.5–1.7 mm, linear triangular to narrowly triangular, abruptly widened at base. Leaves with the petioles 0.9–2(–3) cm; laminas 6–16.5 × 7–18 cm, truncate-widely elliptic in outline, or often truncate to very widely obovate, entire, not variegated, hispidulous on both surfaces with trichomes 0.1–0.4 mm, shallowly 2- or (sub)3-lobed 0.1–0.2(–0.4) the distance to cordate base, the lateral lobes obtuse to acute, always longer than the central lobe, the central lobe obtuse, obsolete, or rarely acute, often with a 3 mm mucro, the sinus between lobes lunate, subtruncate, or shallowly 3-lobed with a cusp in the center, the angle between the lateral lobes (30°–)37°–60°; lowermost leaves and juveniles deeply 2-lobed up to 0.65 the distance to the laminar base, the lobes lanceolate, acute; laminar nectaries absent; tendrils curved during development at shoot tip, up to 35 cm long at maturity; prophyll of vegetative bud one, 1.8–

4 mm, narrowly triangular to narrowly lanceolate. Peduncles 2 per node (rarely 1 per node on lowermost nodes or on young plants), usually richly branched to 3 or 4 orders (rarely unbranched or branched only 1 order at lowermost nodes or on young plants), (1- to) 7- to 20-flowered, 0.5–1.2(–1.4) cm to the first branch, other branches typically 0.3–1 cm, pedicels 0.6–2 cm; bracts (6–)8–17 × (2.5–)5–12 mm, widely elliptic or ovate to obovate, concave, the apex usually acute and abruptly long-cauduate with a 3–5 mm apiculus, margins entire or more usually irregularly shallowly few-cleft or long-toothed, especially near apex, light green, bract position anomalous by exaggerated displacement of each bract distally. Flowers 3–4 cm diam. (to 4.5 cm pressed), green-white or pale green-yellow, often with dull purple centrally, the corona nearly white to cream, the odor mild, fresh, greenish, slightly sweet, with a hint of honey; stipe 0.5–2 mm; hypanthium (floral tube) 9–10 mm diam.; sepals 14–23 × 6.5–10 mm, narrowly ovate-triangular with no projection, light green-yellow abaxially, nearly white to pale green-yellow adaxially; petals 11–18 × 4–6 mm, narrowly ovate or narrowly ovate-oblong, nearly white to green-white to very pale green-yellow; coronal filaments in 2 series, the outer 8–12 mm, ca. 0.6–0.7 mm diam. (fresh), filiform, slightly curved-falcate in distal third, short-attenuate at very apex, cream and unmarked or cream with dull violet or purple on the basal 2 mm, the inner 3–4.5 mm, capillary, apically subclavate, erect; operculum 2–3.5 mm, membranous, plicate, unmarked or with a hint of purple-red; limen edge long-papillate, the floor usually dull or pale purple-red; androgynophore 8–9.5 mm, nearly white except pale purple-red ca. 2 mm at very base, the free staminal filaments 4.5–5 mm, light green, the anthers 3–3.5 mm, the pollen yellow; ovary 2–3 × 1.5–2.9 mm, widely ellipsoid to subglobose, densely white-hirsute, ca. 102 to 138 ovules per flower ($N = 3$), styles 6–7.5 mm, including stigmas. Fruit 13–20 mm diam., subglobose (oblate to widely ellipsoid), estipitate, blue-black, glaucous, lightly pubescent; arils clear-gelatinous, sweet, very fruity, with taste like Concord grape; seeds 2.4–2.9 × 1.4–1.6 mm, black, transversely sulcate with 6 or 7 sulci, the intervening ridges slightly verrucose, the chalazal beak inclined toward the raphe. Germination epigeal.

Passiflora complanata typically has very short petioles and leaves that are broad, thick, and shallowly 2-lobed. The leaves resemble those of the only distantly related *P. costaricensis* Killip. The whole plant is densely white, short-pubescent, the stem is flattened, and the flowers are clustered at the nodes into sometimes massive balls of light green bracts, buds, and pale green-yellow or nearly white flowers. There can be 20 to 40 flowers clustered at a node, though only one to five of the ca. 4 cm flowers will open each day at any one node (greenhouse observations). *Passiflora complanata* is assigned to subgenus *Decaloba* supersect. *Decaloba* (DC.) Rchb. on the basis of its cernuous shoot tip, eglandular petioles, bilobed leaf, plicate operculum, purple berry, transversely sulcate seeds, and lack of chloroplast intron *rpoC1* (Hansen et al., 2006: 149). It has no laminar extrafloral nectaries, which is a synapomorphy of a recently recognized unnamed large clade in supersection *Decaloba* (Krosnick et al., 2013), and the new species is assigned there. Morphological characters of the leaf shape, lack of variegation, broad floral bracts, branched peduncles, and very small seeds place the new species in the *P. sexflora* group (MacDougal, 1989). This placement was confirmed on the basis of four genes by Krosnick et al. (2013) who used this new species in their analysis and placed it in the *P. sexflora* alliance as sister to *P. rugosissima* Killip.

In the *Passiflora sexflora* alliance, *P. complanata* most resembles *P. manantlanensis* J. M. MacDougal in its leaf, the Chiapas form of *P. rugosissima* in its floral bracts and stem, and *P. porphyretica* Mast. in the size of its flower. *Passiflora manantlanensis*, from the mountains of southwestern Mexico, is very similar overall, especially because the range of lobe angles of the leaves is the same, but its leaves are usually more deeply bilobed with acute apices, the bracts are very deeply 5- to 9-cleft, and the smaller flowers have an androgynophore of only 4.5–7 mm. The closely related *P. rugosissima* of Guatemala to Hidalgo, Mexico, is also similar to *P. complanata* in its thick leaves, several-branched inflorescences, wide bracts, and somewhat flattened stems. *Passiflora rugosissima* grows at higher elevations (1700–2600 m), however, and has much smaller flowers with an androgynophore of only 3.8–5 mm; the lobe angle of the leaves is wider; the length of the peduncle to the first branch is (1.0–)1.4–4.0 cm; and the floral bracts are usually smaller and often deeply lacerate. *Passiflora rugosissima* sometimes has a similar flattened stem, as discussed below.

The large size of the flower of the new species, with an androgynophore of 8–9.5 mm, is approached in this species group only by *Passiflora porphyretica*, which can have flowers almost as large, with an androgynophore length of 4.8–8 mm. That species also has large concave bracts, but they are uncleft and sometimes colored brown or olive and are usually glossy-glandular. It can immediately be distinguished from the new species by its unbranched peduncles,

more obviously 3-lobed leaves, and a habitat of seasonally dry areas.

The flattened ribbon-like stem is a distinctive and unusual characteristic of *Passiflora complanata*, and from this the specific epithet is derived. A complanate stem is very unusual in the genus *Passiflora* and is associated here with a phyllotaxy of 1/2 (Ulmer & MacDougal, 2004), which is very obvious at the distichous shoot tip. Nevertheless, the vasculature in this species appears to present helical sympodia of a 2/5 arrangement, more so the norm for the family (Masters, 1871; MacDougal, 1994). The phyllotactic fraction determined from the gross external superposition of the leaves does not correspond to the fraction obtained from the vasculature, as reported for several other species of passionflowers (MacDougal, 1994). The stem is uniformly complanate in the specimens of the new species and obviously complanate in many of the sheets of *P. rugosissima*. Some sheets of *P. rugosissima*, however, have stems that appear to be rounded and subangulate when dried. I cannot state definitely that the flattened stem is characteristic of that species or that it is a synapomorphy shared between these two species, although it appears probable. Study of more living material is needed.

The position of the bracts is unusual in that they are displaced onto the branches they would normally subtend, a topology termed "recaulescent" by Cusset (1968) who analyzed this in various species of Passifloraceae. The bracts here, however, are even more extreme: they are sometimes displaced past the next branching point. This appears to be the situation in all the species of this species group that have compound peduncles (MacDougal, pers. obs.).

A cleared leaf of *Passiflora complanata* from *MacDougal 555GR* was studied and illustrated by Klucking (1992: 243, pl. 95, fig. 2). In fresh greenhouse material of three ovaries, I found 35 to 46 ovules per placenta in rows about four ovules wide. As expected in this supersection of *Passiflora*, the chloroplast intron *rpoC1* is absent in this species (*MacDougal 555GR*, Hansen et al., 2006). The species was self-incompatible in the greenhouse, and no fruits were produced by autogamy over many years of cultivation (MacDougal, pers. obs.; Jorge Ochoa, pers. comm.).

This species was introduced to horticulture in 1980 through the cultivation of several individuals of *MacDougal 555GR* from field-collected seeds. Its axillary clusters of relatively large sweet-smelling flowers and broad pubescent bilobed leaves caught the interest of hobbyists, and this one introduction is still cultivated in Europe and the United States today. The name has already appeared as a nomen nudum in a number of popular books and newsletters and websites. A color photograph appeared in Klock (1996: 115).

Distribution and ecology. *Passiflora complanata* is a species of wet premontane to lower montane forest, cloud forest, and bosque mesófilo de montaña in a small area on the Caribbean drainage of the Sierra Madre Oriental of Oaxaca, Mexico, at (180–) 600–1600(–1800) m. Tree ferns are very commonly recorded as associates, as well as *Cavendishia* Lindl. (Ericaceae) and *Costus* L. (Costaceae). Although of very limited distribution, the new species is locally abundant according to several of the labels. Herbivores are unknown except for a yellow and black larva of the moth *Josia* Hübner sp. (Notodontidae: Dioptinae) taken on *MacDougal 555* (MO-spirit). Native pollinators are unknown, but the floral syndrome suggests medium-sized bees; honeybees have been photographed at the flowers and may effect pollination (J. Ruffin, pers. comm.). The Chinantec vernacular name for this plant is huan-kañ as recorded on *Schultes 565*.

Phenology. *Passiflora complanata* is known to flower from late May to November and fruit from July to December.

IUCN Red List category. According to IUCN Red List criteria, *Passiflora complanata* is categorized as Least Concern (LC). Although the EOO is < 5000 km^2, and there is projected continuing decline in the AOO caused by habitat loss from conversion to agriculture, the populations are not severely fragmented, are known presently from at least 20 populations, are sometimes documented as locally abundant with little exploration of areas away from roads, and the probability of extinction in the next 100 years is low.

Paratypes. MEXICO. **Oaxaca:** Distr. Ixtlán, carr. Valle Nacional a Ixtlán al NO de Chiltepec, *R. Cedillo & D. Lorence 439* (CAS, NY); Distr. Tuxtepec, Mpio. San Felipe Usila, alrededores de Cerro Verde, 8 km linea recta al NNE de San Felipe Usila, *G. Ibarra M., J. Meave, C. Vargas & M. Vargas 3708* (MO); Distr. Ixtlán, Mpio. de Santiago Comaltepec, La Esperanza, *R. López L. 316* (MEXU, MO); Distr. Ixtlán, Mpio. de Santiago Comaltepec, R. Acahual Grande, *R. López L. & Martin 679* (MEXU, MO); carr. Valle Nac. a Ixtlán al NO de Chiltepec, *D. Lorence 439* (NY); Distr. Tuxtepec, Mpio. de Valle Nac., San Mateo Yetla, *J. MacDougal & J. Miley 555* (CAS, CHAPA, DUKE, ENCB, F, GH, MEXU, MICH, MO, NY, TEX, US, XAL), thereafter cultivated from seeds of *555* at Duke University 1980–1983, pressed Oct. 1982–July 1983, *J. MacDougal 555GR* (BH, BM, DUKE, GOET, MEXU, MICH, MO, MO-spirit, UPCB, US, XAL); entre Puerto Eligio a Comaltepec, Km. 149 entre Tuxtepec a Oaxaca, Sierra Juaréz, *G. Martínez C. 542* (CAS, CHAPA, ENCB, MEXU, MO, NY, WIS); Distr.

Ixtlán, Mpio. Santiago Comaltepec, 2.5 km de Metates sobre carr. Tuxtepec–Oaxaca, *L. Mendizábal 213* (MEXU); Distr. Tuxtepec, Mpio. San Felipe Usila, cuenca del Río Perfume, ladera O, 1.5 km en linea recta al NE de Santa Cruz Tepetotutla, *P. Osorio H. 247* (MO); mtn. betw. Choapam & San Juan Teotalcingo, near summit, *R. E. Schultes 565* (UC, US); 0.8 mi. N of Vista Hermosa & 18.1 mi. S of Valle Nac. along Hwy. 175, *J. F. Utley & K. Utley 6733* (DUKE); 2 km al S de Metates, Carr. Tuxtepec–Oaxaca, *J. A. Vázquez 4900* (MO, WIS); Sierra Madre Oriental, 1.5–2 mi. N of Vista Hermosa, *G. L. Webster, G. J. Breckon & S. P. Lynch 17464* (HUA, MEXU).

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